ABSTRACT

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Title of Diploma Thesis: Development of an HPLC method for the determination of 6-gingerol, capsaicin, 8-gingerol, 6-shogaol and 10-gingerol in Zingiber officinale samples

The diploma thesis was focused on the development of an HPLC method for the determination of 6-gingerol, capsaicin, 8-gingerol, 6-shogaol and 10-gingerol in Zingiber officinale samples. At first, freshly prepared rhizome samples of ginger were selected. Afterwards, levels of analytes in model dried ginger powder samples were evaluated. 6-gingerol had always showed highest response in both fresh rhizome samples of ginger and dried ginger powder samples. Capsaicin has not been found in any sample. 6-shogaol has only been found in dried ginger powder samples. Extraction of other substances depended on the methodology of preparation of particular samples.

During the optimization of this method, various mobile and stationary phases were examined. The suitable mobile phase was composed of acetonitrile and water in 50/50 (v/v) ratio. Ascentis® Express Phenyl-Hexyl analytical column (100 x 4.6 mm; 2.7 µm) was chosen as a stationary phase for analysis, which was also used for partial method validation. The flow rate was set at 1 ml/min and the injection volume was 5 µl. The column oven was set at 50 °C and detection was in the UV at 282 nm.

A partial validation was performed on dried ginger powder samples. The system suitability test of the chromatographic system was verified and values for precision, accuracy, linearity, stability and limit of detection and limit of quantification were determined.